APPENDIX D
STREAMBED DELINEATION STUDY
TM 5449
In
The
Fallbrook area of
San Diego County, CA
USGS 7.5-minute topographic Bonsall quadrangle map in SECTION 22 OF TOWNSHIP 9 SOUTH, RANGE 3 West

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TABLE OF CONTENTS

I. INTRODUCTION

This report contains the results of a streambed delineation conducted for U.S. Army Corps of Engineers (ACOE), California Regional Water Quality Control Board (RWQCB), and California Department of Fish and Game (DFG) jurisdiction of TM 5449.[1] The unnamed drainages discussed in this report are located north of Reche Road and west of Ranger Road in the Fallbrook area of San Diego County, California. See Figures 1 and 2. The site is found on U.S.G.S. Bonsall quadrangle in Section 22, Township 9 South, Range 3 West. The center of the project site is located at Longitude 117 .17628 and Latitude 33.36710. Unnamed Drainages are tributary to an unnamed tributary to San Luis Rey River.

1 This report presents the best effort at estimating the subject jurisdictional boundaries using the most up-to-date regulations and written policy and guidance from the ACOE, RWQCB, County of San Diego and DFG. Only ACOE, RWQCB, County of San Diego and DFG can make a final determination of jurisdictional boundaries.

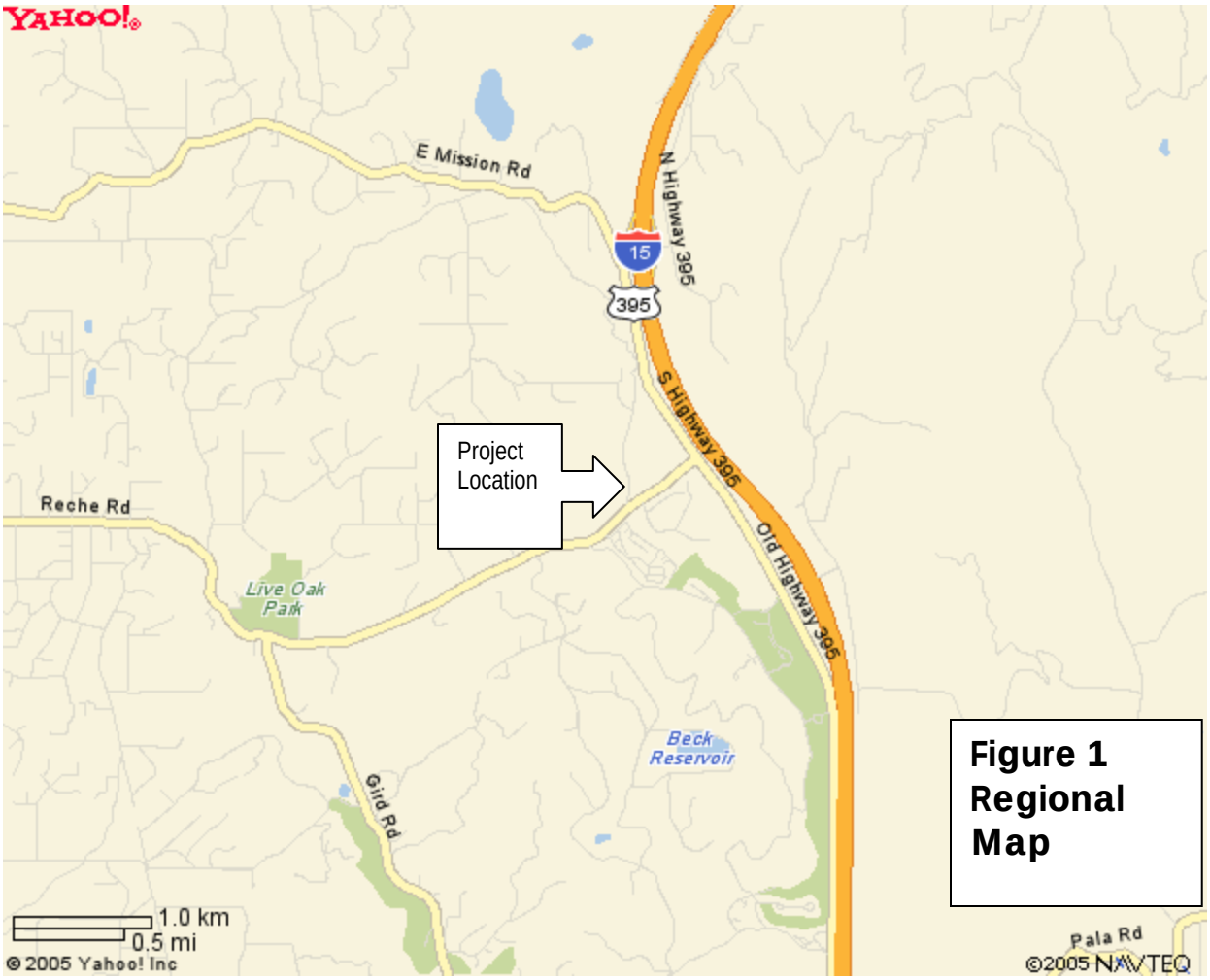

Figure 1 Regional Map

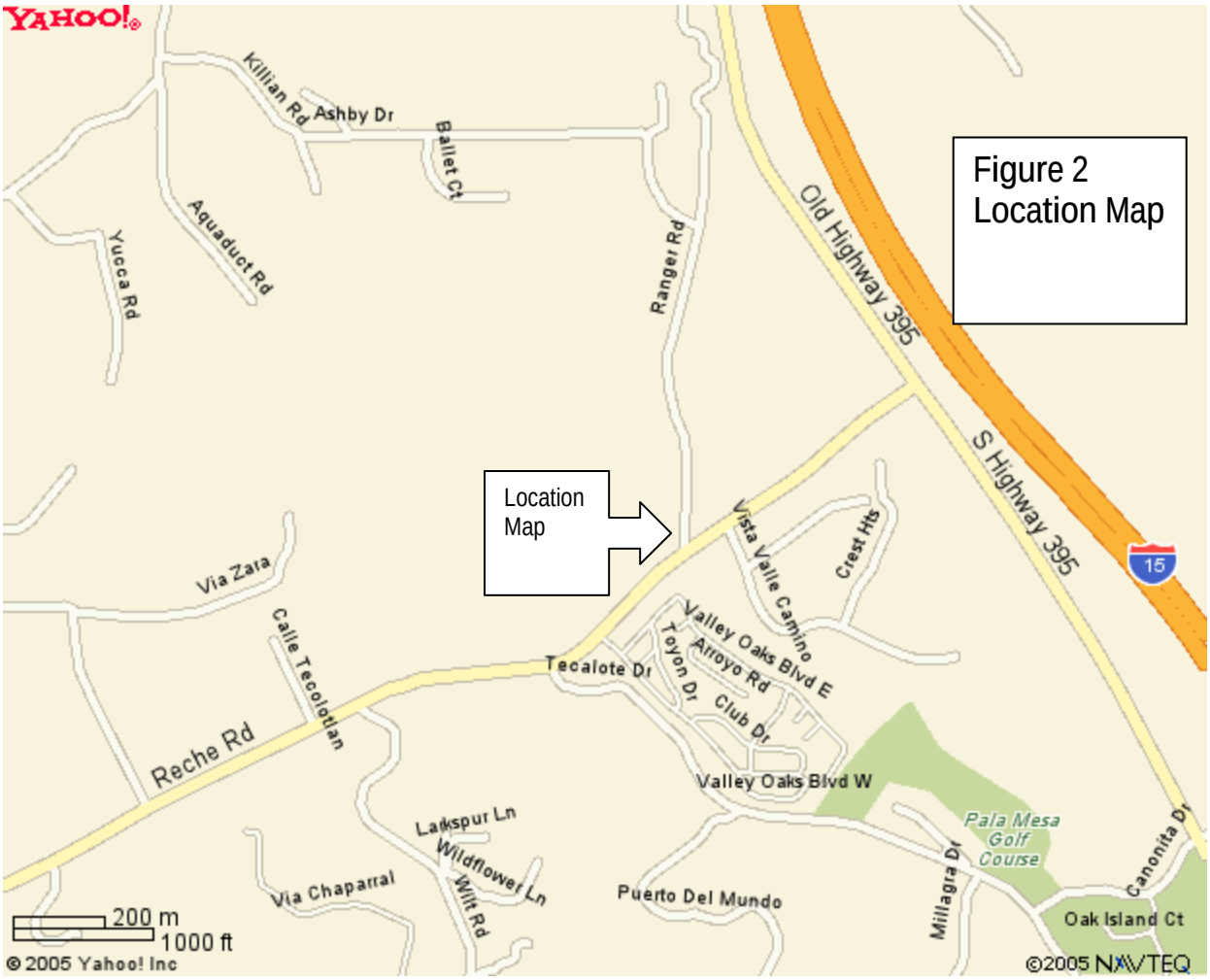
Figure 2
Location Map
Location
Map
Killian Rd
Ashby Dr
Ballet Ct
Aquaduct Rd
Yucca Rd
Ranger Rd
Old Highway 395
S Highway 395
15
Via Zara
Calle Tecolotlan
Reche Rd
Tecalote Dr
Vista Valle Camino
Crest Hts
Valley Oaks Blvd E
Arroyo Rd
Toyon Dr
Club Dr
Valley Oaks Blvd W
Pala Mesa
Golf
Course
Canonita Dr
Millagra Dr
Oak Island Ct
Larkspur Ln
Wildflower Ln
Wilt Rd
Via Chaparral
Puerto Del Mundo
200 m
1000 ft
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The delineation is authorized via contract with Keystone Communities and VHBC, Inc. Teresa Gonzales was the delineator for this project. Field surveys were conducted on March 17, and 19, 2006.

The purpose of this report is to determine the areas of the project site that are subject to US Army Corps of Engineers (ACOE) jurisdiction under Section 404 of the Clean Water Act, and Section 10; California Department of Fish and Game (CDFG) jurisdiction under Section 1600 of the California Fish and Game Code; and, California Regional Water Quality Control Board jurisdiction under Sections 401 and 402 of the Clean Water Act.

REGULATORY BACKGROUND

Army Corps of Engineers

The ACOE typically regulates any drainage channel having at least intermittent flow as "waters of the U.S.". The ACOE jurisdiction over non-tidal waters of the US extends laterally to the ordinary high water mark (OHWM), but may extend beyond the OHWM to include any adjacent wetlands.

Federal jurisdictional areas were determined utilizing the 1987 Corps of Engineers Wetlands Delineation Manual[2]. Federal wetland determinations are based on three parameters: vegetation, soils and hydrologic characteristics of the area.

Pursuant to Section 404 of the Clean Water Act, the Corps regulates the discharge of dredged and/or fill material into waters of the United States. The term "waters of the United States" is defined in Corps regulations at 33 CFR Part 328.3(a) as:

> *(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;*
>
> *(2) All interstate waters including interstate wetlands;*
>
> *(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect foreign commerce including any such waters:*
>
> > *(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or*

2 United States Army Corps of Engineers. 1987. Corps of Engineers Wetlands Delineation Manual. 90 pps.

(ii) From which fish or shell fish are or could be taken and sold in interstate or foreign commerce; or

(iii) Which are used or could be used for industrial purpose by industries in interstate commerce...

(iv) All impoundments of waters otherwise defined as waters of the United States under the definition;

(4) Tributaries of waters identified in paragraphs (a) (1)-(4) of this section;

(5) The territorial seas;

(6) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1)-(6) of this section.

(7) Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with the EPA.

Note: Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 123.11(m) which also meet the criteria of this definition) are not waters of the United States.

In the absence of wetlands, the limits of ACOE jurisdiction in non-tidal waters, such as intermittent streams, extend to the ordinary high water mark (OHWM), which is defined at 33 CFR 328.3(e) as:

...that line on the shore established by the fluctuation of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

The term "wetlands" (a subset of "waters of the United States") is defined at 33 CFR 328.3(b) as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support...a prevalence of vegetation typically adapted for life in saturated soil conditions." In 1987, the Corps published a manual to guide its field personnel in determining jurisdictional wetland boundaries. The methodology set forth in the 1987 Wetland Delineation Manual generally requires that, in order to be considered a wetland, the vegetation, soils, and hydrology of an area exhibit at least minimal hydric characteristics. While the manual provides great detail in methodology and allows for varying special conditions, a wetland should normally meet each of the following three criteria:

- more than 50 percent of the dominant plant species at the site must be typical of wetlands (i.e., rated as facultative or wetter in the National List of Plant Species that Occur in Wetlands[3]);
- soils must exhibit physical and/or chemical characteristics indicative of permanent or periodic saturation (e.g., a gleyed color, or mottles with a matrix of low chroma indicating a relatively consistent fluctuation between aerobic and anaerobic conditions); and
- hydrologic characteristics must indicate that the ground is saturated to within 12 inches of the surface for at least five percent of the growing season during a normal rainfall year[4].

These requirements may or may not apply to isolated, non-navigable waters (vernal pools) pursuant to a January 9, 2001 U.S. Supreme Court decision *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* [531 U.S. 159 (2001) (SWANCC)]. SWANCC eliminates CWA jurisdiction over isolated, intrastate, non-navigable waters where the sole basis for asserting CWA jurisdiction is the actual or potential use of the waters as habitat for migratory birds that cross State lines in their migrations.

California Department of Fish and Game

Fish and Game jurisdictional areas were determined utilizing California Department of Fish and Game Code Section 1602[5] which requires that general plans be submitted to the California Department of Fish and Game (Department) if the project will (1) divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake designated by the Department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit, (2) use material from the streambeds designated by the department, or (3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake designated by the Department.

California Regional Water Quality Control Board

Water Quality Certification[6] is required for discharges of dredged and fill materials. By federal law, every applicant for a federal permit or license for an activity which may result in a discharge into a water body must request state certification that the proposed activity will not violate state and federal water quality standards. Water quality standards include beneficial uses of water, water quality objectives and antidegradation policy.

Regional Water Quality Control Board (RWQCB) has jurisdiction over similar "Wetlands" and

3 Reed, P.B., Jr. 1988. National List of Plant Species that Occur in Wetlands. U.S. Fish and Wildlife Service Biological Report 88(26.10).

4 For most of low-lying southern California, five percent of the growing season is equivalent to 18 days.

5 California Department of Fish and Game. 2004. California Fish and Game Code. 553 pps.

6 United States Environmental Protection Agency. 1977. Clean Water Act. 33 USC 1251 et seq.

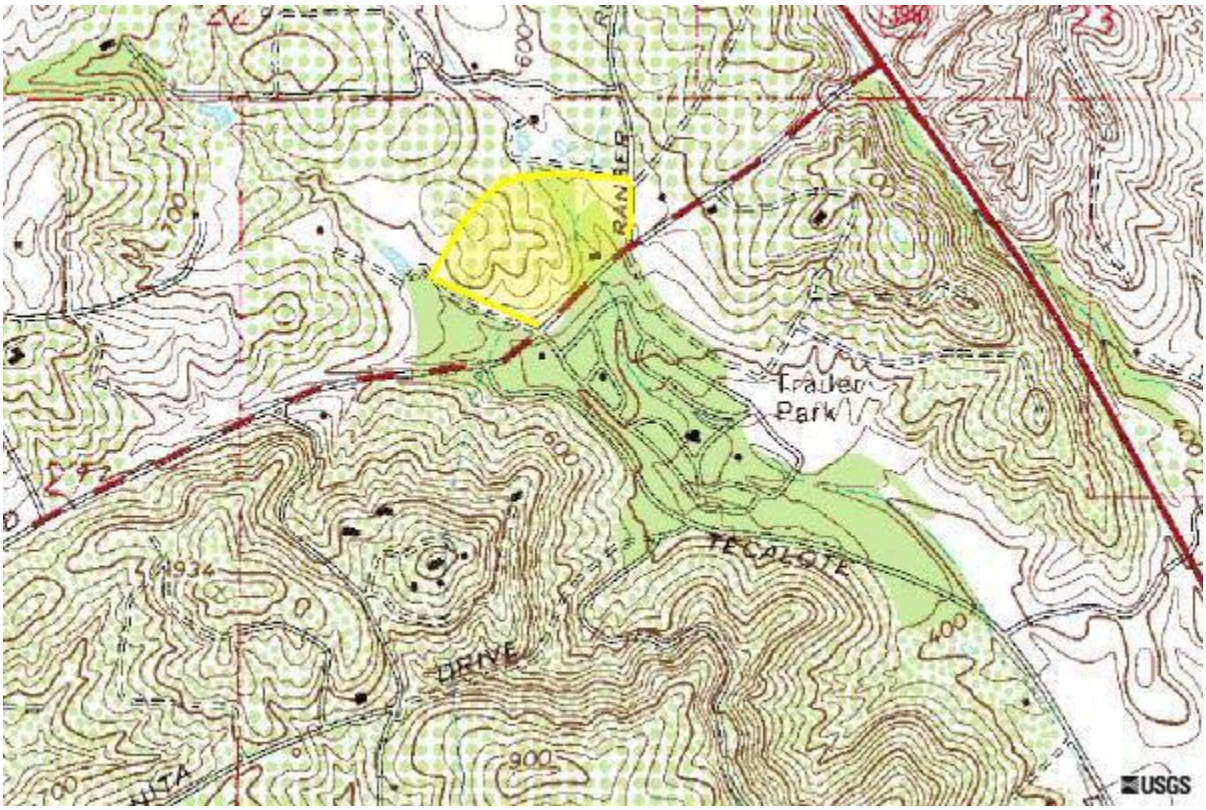
"Waters of the United States" under Section 401 of the Clean Water Act (CWA) and the Porter-Cologne Water Quality Control Act (Porter-Cologne). Permitting of activities that would result in a discharge of soils, nutrients, chemicals, or other pollutants into Waters of the United States or adjacent wetlands, which would affect the water quality of those bodies and the area watershed, are regulated by the Board. The RWQCB also regulates discharge activities affecting Waters of the State as defined in Porter-Cologne. Isolated, non-navigable waters (e.g., vernal pools), are covered under Porter-Cologne. Statewide Waste Discharge requirements for dredged or fill discharges to waters deemed by the ACOE to be outside federal jurisdiction have been in effect since May 19, 2004.

County of San Diego

Wetland areas under County of San Diego (County) jurisdiction were determined based upon the County's Resource Protection Ordinance (RPO). Under the RPO, Lands having one or more of the following attributes are "wetlands":
(aa). At least periodically, the land supports a predominance of hydrophytes (plants whose habitat is water or very wet places);
(bb). The substratum is predominantly undrained hydric soil; or
(cc). An ephemeral or perennial stream is present, whose substratum is predominately non-soil and such lands contribute substantially to the biological functions or values of wetlands in the drainage system.
(County 2007).

II. METHODS

The starting point for this study was a field trip to the project site in March 2006. For this study the "Routine Onsite Determination Method" data forms were used, onto which recorded information or otherwise compiled notes regarding the descriptive physical and biological attributes from the area. From a combination of field experience, references, assistance from others, and reconnaissance trips information resources were compiled from which the jurisdictional determinations have been made. Photographs were taken on each visit, some of which are included in this document. Field notes and photographs were arranged by date.



Yellow=Project Location

↑ North

Scale: m 200 400 600
yds 200 400 600

Figure 3
Project Site-Quadrangle

Source: Bonsall quadrangle 7.5 topographical map. July 1, 1975. Please note that this is a locality map, and should not be used for calculations.

The routine approach was utilized on this project, with on-site determination based on dominant plant species, soil characteristics, and hydrologic characteristics of the area.

Data sources used:
a. USGS quadrangle maps
b. County Soil Surveys
c. Aerial photos
d. State list of hydric soils
e. National Wetlands Inventory List of Plant Species that Occur in Wetlands (1988)
f. Munsell Soil Charts

The following steps were performed:
1. Project area was identified and mapped on USGS quadrangle map.
2. Vegetation for the project area was summarized and identified utilizing transects and observation points.
3. Area soils were characterized and identified.
4. Hydrology data was gathered utilizing field hydrologic indicators and available data.

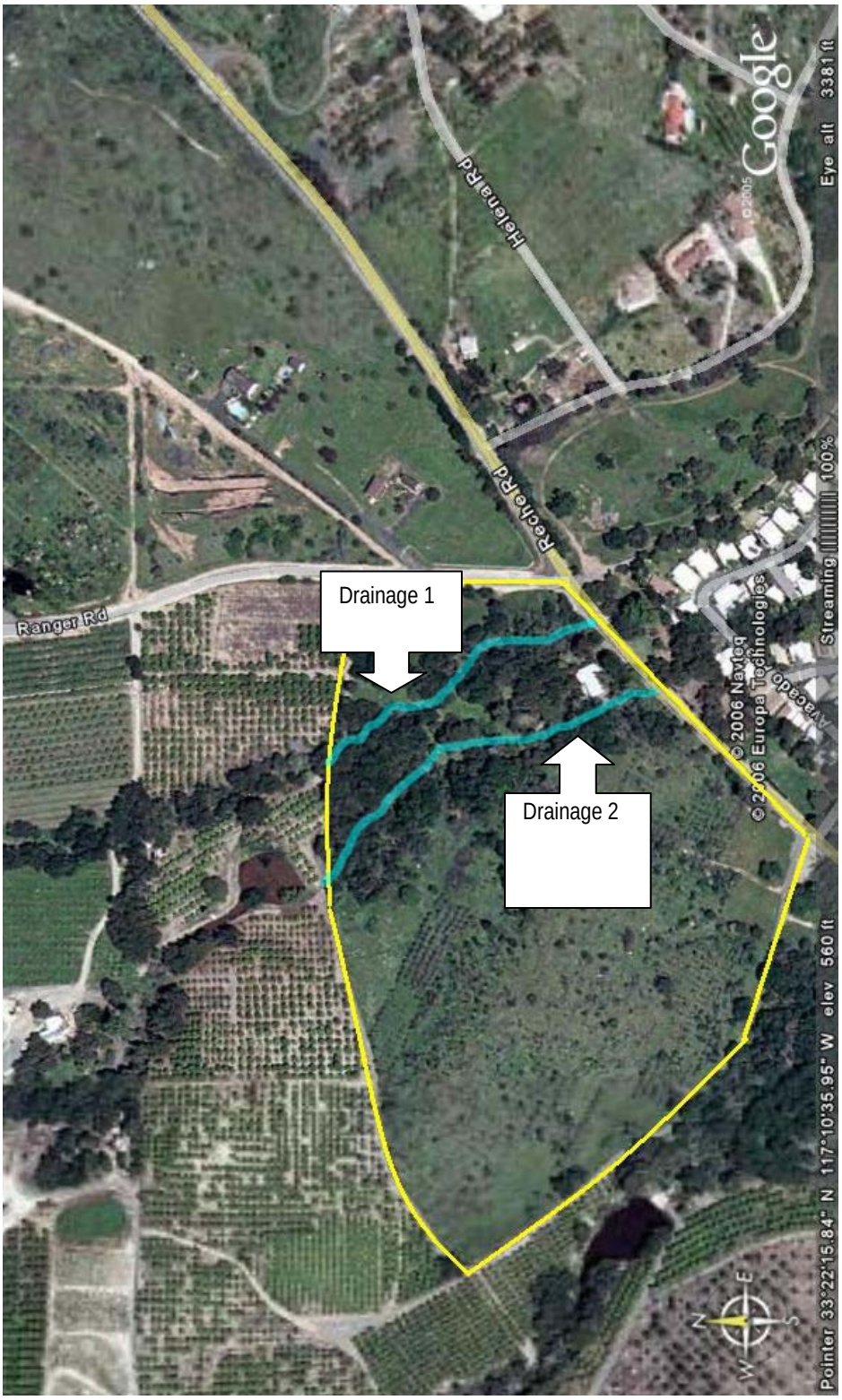


Figure 4
Drainage
Locations

Source: Google Earth, 2006. www.googleearth.com

III. RESULTS AND DISCUSSION

A. DESCRIPTION OF SITE

1. TOPOGRAPHY

The project area is east of the City of Fallbrook and west of Interstate 15. The surrounding topography includes steep hills and valleys. The project site is relatively flat on the eastern portion of the site and includes a small hill on the western portion.

2. PLANT COMMUNITIES

Six plant communities (vegetation types) and one other land cover type were identified onsite: coast live oak woodland, disturbed coast live oak woodland, non-native grassland, non-native vegetation, southern coast live oak riparian forest, valley needlegrass grassland, and urban/developed (developed).

Coast live oak woodland (oak woodland) is dominated by coast live oak (*Quercus agrifolia*), which may occur in pure stands, open savannas, or in stands mixed with conifers and broadleaf trees. The shrub layer is poorly developed but may include large shrubs such as toyon (*Heteromeles arbutifolia*), laurel sumac (*Malosma laurina*) and blue elderberry (*Sambucus mexicana*). Non-native grasses such as ripgut brome (*Bromus diandrus*) dominate the herb layer. Western poison oak (Toxicodendron diversilobum) is also a characteristic species in oak woodland.

Coast live oak woodland was distinguished from adjacent southern coast live oak riparian forest by the greater distance of the vegetation from the stream channels, and an understory dominated by non-native grasses and forbs lacking dense vines, shrubs, and other mesic understory species typically associated with riparian vegetation.

Non-native grassland occurs along the eastern edge of the site and throughout most of the western part of the site, including most of the area of abandoned grove. This vegetation type has a dense (greater than 80% cover) herb layer containing non-native grasses, such as wild oat (*Avena fatua*) and soft brome *(Bromus hordeaceus)*, non-native herbs, such as Italian thistle (*Carduus pycnocephala*), black mustard (*Brassica nigra*), red-stemmed filaree (*Erodium cicutarium*) and fennel (*Foeniculum vulgare*), or dove weed (*Eremocarpus setigerus*), a native herb.

Non-native vegetation classification includes areas with a 50% or greater cover of non-native arboreal ornamental or agricultural plants: areas dominated by clusters of Mexican fan palms (*Washingtonia robusta*); groups of at least two pine (*Pinus* sp.) trees; areas where abandoned walnut (*Juglans* sp.) and avocado (*Persea* sp.) trees maintain a healthy canopy (at least 80% living); and an area with a closed canopy of young *Prunus* sp. trees

(six to eight feet tall) on a northeast-facing slope above the riparian forest.

Also included in this classification is a barren area of compacted dirt off Range Road in the northeastern part of the site, considered disturbed habitat. Disturbed habitat refers to land that has been permanently altered by previous human activity that has eliminated all future biological value of the land for most species.

Unnamed Drainage 1

The unnamed Blue-line stream traverses the property in a north to south direction, until leaving the property boundaries via a 6- foot culvert. Run-off from Ranger Road is directed into a culvert along Reche Road which flows into this drainage near the 6-foot culvert. Vegetation includes coast live oak (*Quercus agrifolia*), toyon (*Heteromeles arbutifolia*), and laurel sumac (*Malosma laurina*). The hydrology of this stream is likely influenced by runoff from agricultural landuses to the north. Channel incising is present, and there are signs of hydrology (i.e. Drift lines, sediment deposits, and watermarks).

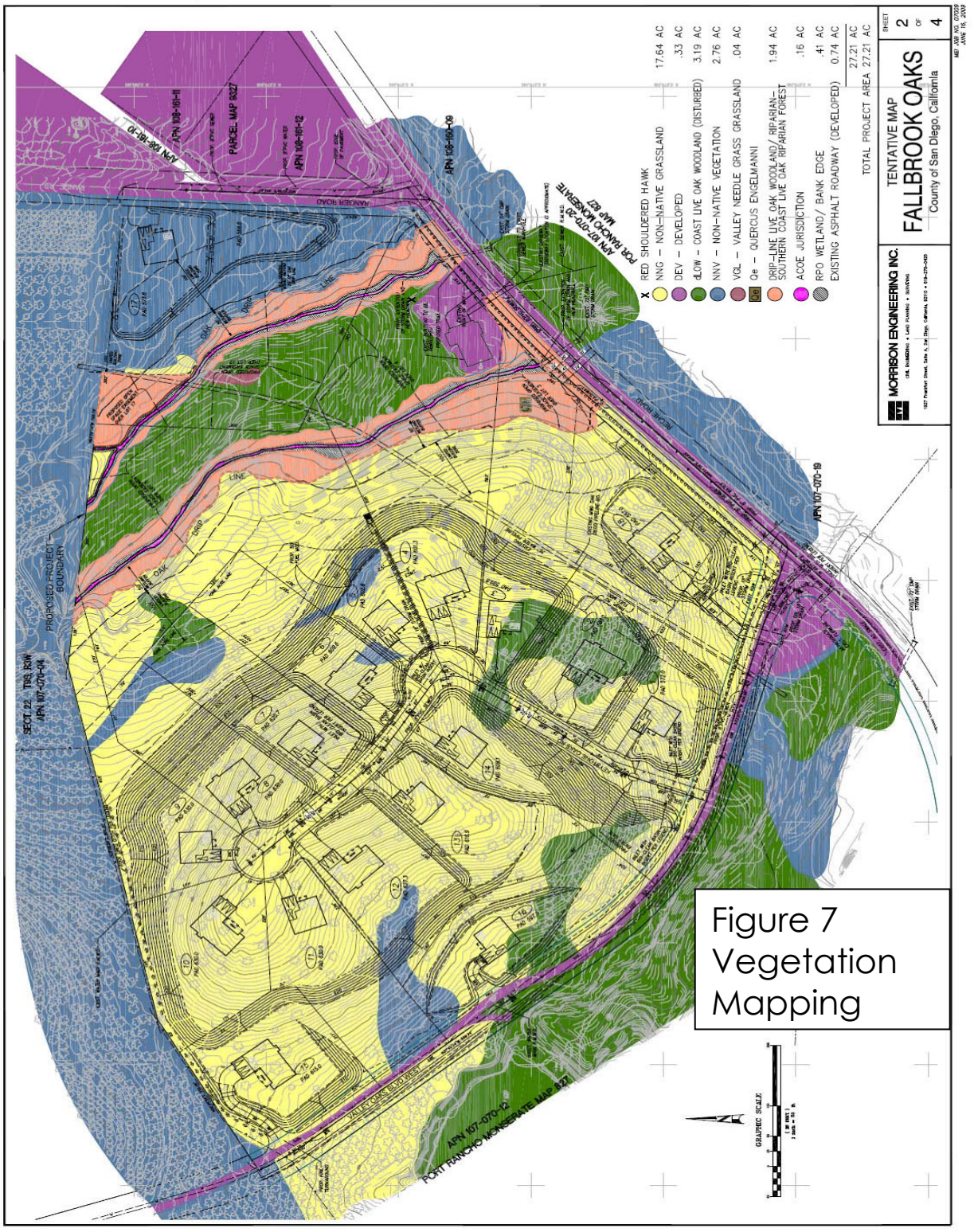
Figure 5
Unnamed Drainage 1

Unnamed Drainage 2

The unnamed stream traverses the property in a north to south direction, and is located west of the unnamed Drainage 1 until leaving the property boundaries via a 5-foot culvert. Vegetation includes coast live oak (*Quercus agrifolia*), Periwinkle (*Vinca major*), Mugwort

(*Artemisia douglasiana*), water cress (*Rorippa nasturtium-acquaticum*) and Palm (*Washingtonia sp.*). Perennial waterflow is determined by the agricultural land uses to the north. Channel incising is present, and there are signs of hydrology (i.e. Drift lines, sediment deposits, and watermarks).

Figure 6
Unnamed Drainage 2


TENTATIVE MAP
FALLBROOK OAKS
County of San Diego, California
MORRISON ENGINEERING INC.
SHEET 2 OF 4
RED SHOULDERED HAWK
NNG – NON–NATIVE GRASSLAND 17.64 AC
DEV – DEVELOPED .33 AC
dLOW – COAST LIVE OAK WOODLAND (DISTURBED) 3.19 AC
NNV – NON–NATIVE VEGETATION 2.76 AC
VQL – VALLEY NEEDLE GRASS GRASSLAND .04 AC
Qe – QUERCUS ENGELMANNI
DRIP–LINE LIVE OAK WOODLAND/ RIPARIAN–SOUTHERN COAST LIVE OAK RIPARIAN FOREST 1.94 AC
ACOE JURISDICTION .16 AC
RPO WETLAND/ BANK EDGE .41 AC
EMSTING ASPHALT ROADWAY (DEVELOPED) 0.74 AC
TOTAL PROJECT AREA 27.21 AC 27.21 AC
PARCEL MAP 8527
APN 108-161-11
APN 108-161-12
APN 108-161-09
APN 107-070-20
FOR RANCHO MONSERATE MAP 827
APN 107-070-19
APN 107-070-04
SECT. 22 T09 R3W
PROPOSED PROJECT BOUNDARY
APN 107-070-12
PORT RANCHO MONSERATE MAP 827
GRAPHIC SCALE
Figure 7
Vegetation
Mapping

3. SOILS

The site is mapped as containing sandy loam soils in the Vista, Ramona, Placentia, and Fallbrook series, and it contains Steep gullied land (Bowman 1973). These soils are well-drained or moderately well-drained, have neutral pH, and are not recognized as providing a substrate for particular rare plant species.

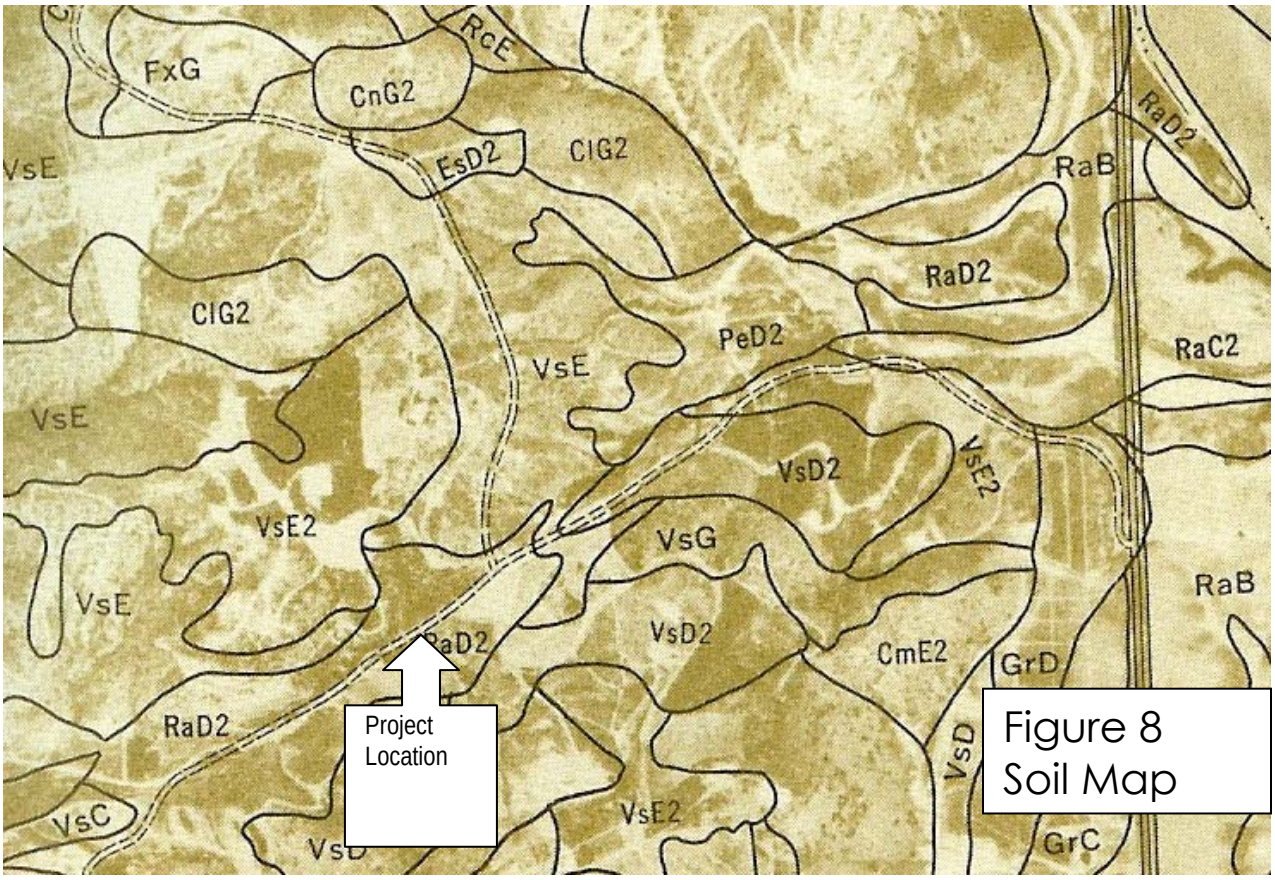
Steep gullied land, found in a band through the center of the site (in approximately the same area as the streams onsite) is actively eroding into old alluvial or decomposed rock parent material (Bowman 1973).

Ramona sandy loam, 5 to 9 percent slopes occurs along either side of the steep gullied land. It is a well-drained soil with sandy loam topsoil 11 to 21 inches deep over sandy clay loam subsoil from 30 to 56 inches thick. Ramona soils are derived from granitic alluvium on alluvial fans and terraces. Native vegetation typically found on these soils includes chamise chaparral and scattered oaks and annual forbs (Bowman 1973).

Vista coarse sandy loam, 15 to 30 percent slopes, found in most of the western one-third of the site, occur on sloping uplands and are derived from granodiorite or quartz diorite. This moderately well drained soil has grayish brown to dark-brown topsoil 14 to 23 inches deep over the sandy loam subsoil that extends from 27 to 47 inches depth. Vista soils typically support chamise chaparral, coastal sage scrub, and annual grassland (Bowman 1973).

Placentia sandy loam, 2 to 9 percent slopes, eroded, occurs in the southeastern corner of the site. Placentia series soils are moderately well-drained soils that form on granitic alluvium on old alluvial fans. The topsoil extends from 9 to 20 inches deep, above a sandy clay to heavy clay subsoil. Placentia soils typically support oak savannah, chamise chaparral, and annual grassland (Bowman 1973).

Fallbrook sandy loam, 9 to 15 percent slopes, eroded occurs at the southern tip of the site. It is from 27 to 50 inches deep, with a sandy loam topsoil and loam to sandy clay loam subsoil. Fallbrook series soils are well-drained, deep sandy loams formed in place from weathering of granodiorite. This soil typically supports grasslands, oak, broadleaved, or chamise chaparral vegetation (Bowman 1973). The soils found are consistent with the soils mapped for the area.



Scale:

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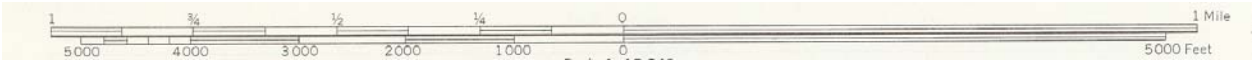


Source:
United States Department of Agriculture Soil Conservation Service. 1973.Soil Survey San Diego Area, California. 122 pgs, illust.

4. HYDROLOGY

The prevailing gradient of the land in the project area is from the north to south, depending on the location of land formations.

Rainfall

The 2-year, 24-hour precipitation is 2.5 inches in the project area. The 100-year, 24-hour precipitation is 6.5 inches in the project area.

Hydrologic Soil Groups

Soils are classified into hydrologic soil groups (HSG's) to indicate the minimum rate of infiltration obtained for bare soil after prolonged wetting. The HSG's are one element used in determining runoff curve numbers. The infiltration rate is the rate at which water enters the soil at the soil surface. It is controlled by surface conditions. HSG also indicates the

transmission rate-the rate at which the water moves through the soil. This rate is controlled by the soil profile. The project site has Group B soils[7] which have moderate infiltration rates when thoroughly wetted, and consist chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately course textures. These soils have a moderate rate of water transmission (0.05-0.30 in/hr).

Runoff Curve Numbers

The runoff curve numbers for the project is 62 and 74. The cover type is herbaceous-mixture of grass, weeds, and low growing brush, with brush the minor element. The hydrologic condition is good.

SCS Synthetic Rainfall Distributions

The highest peak discharges from small watersheds are usually caused by intense, brief rainfalls that may occur as distinct events or as part of a longer storm. These intense rainstorms do not usually extend over a large area and intensities vary greatly. One common practice in rainfall-runoff analysis is to develop a synthetic rainfall distribution to use in lieu of actual storm events. This distribution includes maximum rainfall intensities for the selected design frequency arranged in a sequence that is critical for producing peak runoff.

The length of the most intense rainfall period contributing to the peak runoff rate is related to the time of concentration (T_c) for the watershed. Different rainfall distributions can be developed for each of these watersheds to emphasize the critical rainfall duration for the peak discharges. The project area is in the Type 1 Rainfall distribution area. Type 1 represents the Southern California Pacific maritime climate with wet winters and dry summers.

Studies by the Soil Conservation Service (SCS) resulted in the following empirical relationship for runoff:

$$Q = \frac{(P-.2S)^2}{P+.8S} \quad (Q = 0 \text{ if } P < .2S)$$

Q= Precipitation excess (runoff) {inches}
P= Cumulative precipitation {inches}
S= Potential maximum retention {inches}
CN= SCS Curve Number

The SCS runoff equation predicts the volume of runoff resulting from a given precipitation depth. The key factor in this translation is the SCS Curve Number.

SCS Runoff Equation

7 Soil Conservation Service. 1986. TR-55.

Studies by the SCS resulted in the following empirical relationship for runoff:

$$Q = \frac{(P-.2S)^2}{P+.8S} \qquad (Q=0 \text{ if } P<.2S)$$

$$\text{Where } S = \frac{1000}{CN} - 10$$

Q= Precipitation excess (runoff) {inches}
P= Cumulative precipitation {inches}
S= Potential maximum retention {inches}
CN= SCS Curve Number

Time of Concentration

While the SCS runoff equation predicts the volume of runoff, it does not specify when the runoff will occur. To determine how the runoff is distributed over time, we must introduce a time-dependent factor. The time of concentration, or T_c, is commonly used. The T_c is typically defined as the time required for a particle of water to travel from the most hydrologically remote point in the watershed to the point of collection.

Arid Area Delineations

With non-tidal waters, in the absence of adjacent wetlands, the extent of the Corps jurisdiction is defined by the "ordinary highwater mark" (Department of Defense 1986). In 33 CFR Part 329.1, the "Ordinary Highwater Mark" for non-tidal rivers is defined as the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation or the presence of litter and debris (Department of Defense 1986). In general, the OHWM for a stream is usually determined through an examination of the recent physical evidence of surface flow in the stream channel. In dryland fluvial systems typical of the desert areas, the most common physical characteristics indicating the OHWM for a channel usually include, but are not limited to: a clear natural scour line impressed on the bank; recent bank erosion; destruction of native terrestrial vegetation; and the presence of litter and debris. For many small desert wash systems, the presence of continuous well-developed upland vegetation in the stream channel is a good indicator that it only conveys surface flow during extremely large storm events and, as a result, would not usually constitute a jurisdictional water of the United States. However, the presence of native riparian species in a dry wash is usually a good indicator that the stream channel usually exhibits surface flow during both small and moderate storm events. Using available hydrologic information and reliable estimates for storm flows, Regulators and environmental consultants should ensure that the horizontal extent of Corps jurisdiction is consistent with reliable discharge data and/or estimated storm flows for the given fluvial system.[8]

8 U.S. Department of the Army. 2001. Final Summary Report: Guidelines for Jurisdictional Determinations for Waters of the United States in the Arid Southwest. 12 pps.

Project Area Hydrology

SCS Synthetic Rainfall Distribution hydrographs were developed for this area. Both drainages meet the Corps jurisdiction requirements. California Department of Fish and Game and California Regional Water Quality Control Board requirements have also been met for the drainages.

B. FINDINGS

1. Type of Federal Wetland identified: None

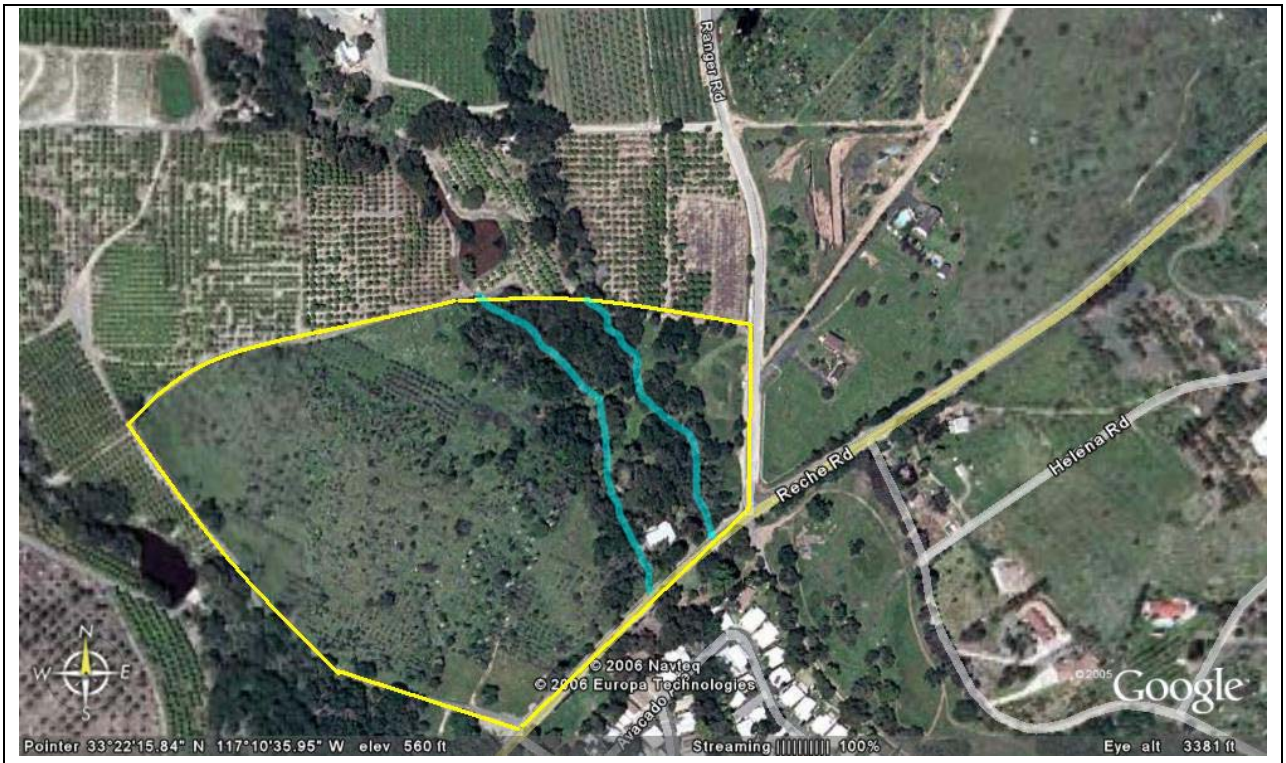
2. Types of other water identified:

a. Description

Drainages: Mid-intermittent sub-class cobble-gravel, subclass mixed deciduous and evergreen, intermittently-exposed regime, freshwater alkaline, woodland (*Quercus agrifolia*). Classification type # 33.133.257.28.3.5810[9]

9 Cowardin, Lewis M., Virginia Carter, Francis Golet, and Edward T. LaRoe. Classification of wetlands and deepwater habitats of the United States. Office of Biological Services, U.S. Fish and Wildlife Service, 1979. FWS/OBS-79/31.

b. Location and area



Turquoise/Green=Southern Coast Live Oak Riparian Forest

Figure 9

↑ North

Waters/Streambed Mapping

Source: Google Earth. 2006.
Please note that this is a locality map, and should not be used for calculations

c. Contrast with non-wetland/waters:
The wash areas are limited by topography and water availability to specific areas. Vegetation differences and bank indicators are subtle. The drainages are the low spots in the topography.
d. How was the boundary chosen:
The boundary for upland/wash was determined by field examination of habitat, soils, and hydrology. The boundaries of the washes were readily determined for the areas.

3. Additional Type of Wetlands identified: None

Table 3: Potential Jurisdictional Areas

Jurisdiction	Short Description	Location	Calculations (Jurisdictional Area)	Acreage
State	Bank to bank (Bank depth varies between 2"-3') Maximum width is drip line or bank to bank, whichever is greater	Unnamed Drainage 1	720 feet x 25 feet= 18,000 ft ^{2}	0.41 acre
Federal	Bank to bank (Bank depth varies between 2"-9"	Unnamed Drainage 1	720 feet x 1.50 feet = 1080 ft ^{2}	0.02 acre
RPO	Maximum width is bank to bank	Unnamed Drainage 1	720 feet x 2.5 feet = 1800 ft ^{2}	0.04 acre
State	Bank to bank (Bank depth varies between 2"-3') Maximum width is drip line or bank to bank, whichever is greater	Unnamed Drainage 2	960 feet x 41 feet= 39,360 ft ^{2}	0.90 acre
Federal	Bank to bank (Bank depth varies between 2"-9"	Unnamed Drainage 2	960 feet x 3 feet = 2,880 ft ^{2}	0.07 acre
RPO	Maximum width is bank to bank	Unnamed Drainage 2	960 feet x 4.2 feet = 4,032 ft ^{2}	0.09 acre

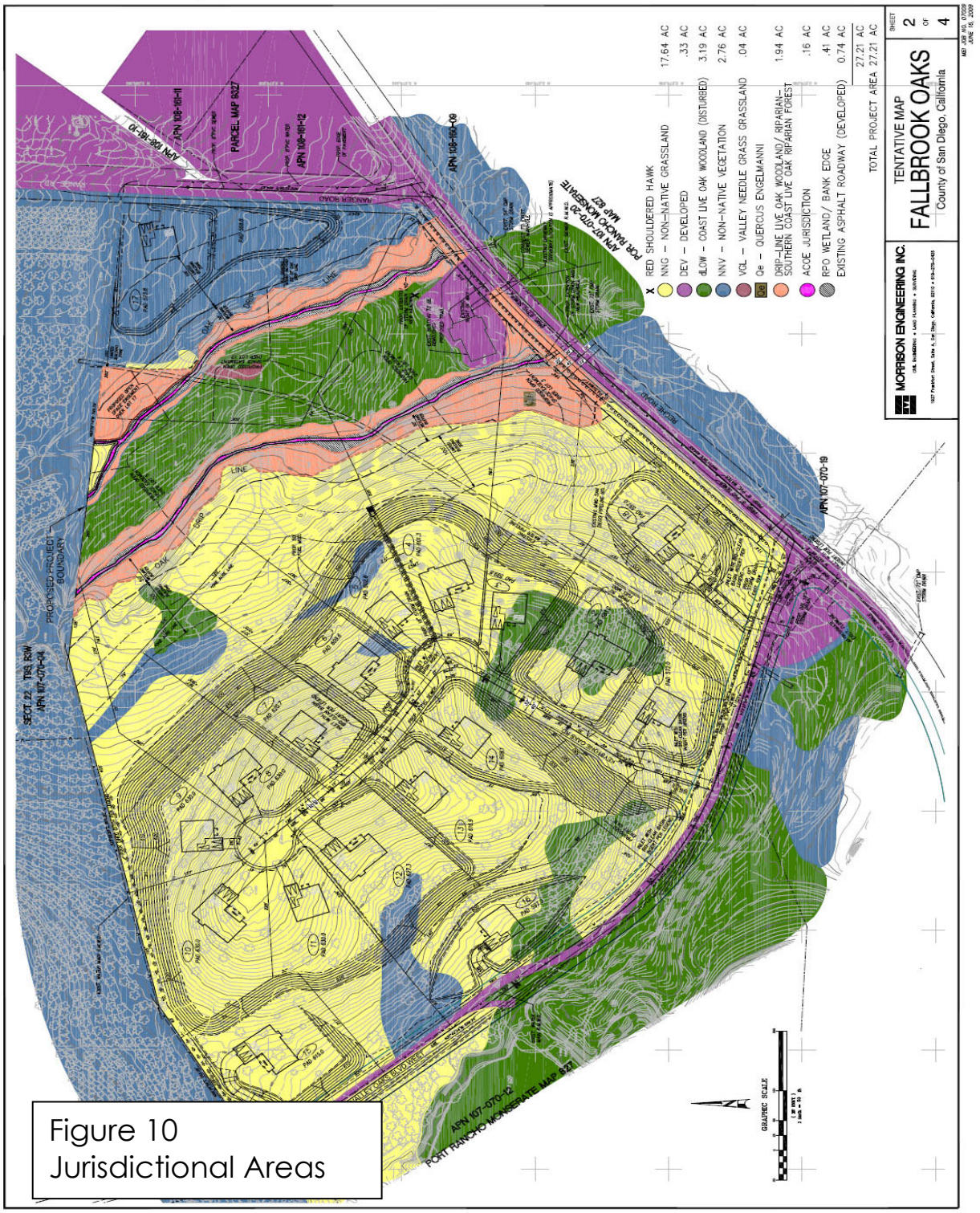


Figure 10
Jurisdictional Areas

C. PROJECT IMPACTS AND CUMULATIVE IMPACTS

Cut and fill grading associated with improvements to Reche Road and placement of flood control structures within the channels will result in permanent direct impacts to waters of the state, U.S. and RPO.

Temporary impacts to currently culverted areas will also occur.

Table 4: Federal Jurisdictional Impacts

Drainage	Permanent Impacts		Temporary Impacts	
	Length	Acreage	Length	Acreage
Drainage 1	35	0.002	21	0.001
Drainage 2	29	0.004	18	0.002
	64	0.006	39	0.003

Table 5: State Jurisdictional Impacts

Drainage	Permanent Impacts	
	Length	Acreage
Drainage 1	35	0.02
Drainage 2	29	0.03
	64	0.05

Table 6: RPO Jurisdictional Impacts

Drainage	Permanent Impacts	
	Length	Acreage
Drainage 1	35	0.002
Drainage 2	29	0.003
	64	0.005

IV. CONCLUSIONS

FEDERAL JURISDICTIONAL AREAS

ACOE regulates discharge of fill into "waters of the US" including wetlands and non-wetland waters that meet specific criteria. Specific criteria are met for this project. ACOE jurisdictional areas include the two drainages discussed above. Please see Table 4.

STATE JURISDICTIONAL AREAS

California Department of Fish and Game, and California Regional Water Quality Control Board regulate impacts to bed, bank, channel, vegetation and waters of the state. Please see Table 5.

RPO JURISDICTIONAL AREAS

The County of San Diego RPO wetland areas are evaluated in Table 6.

Permits/agreements needed

A U.S. Army Corps of Engineers permit, California Department of Fish and Game Streambed Alteration Agreement and California Regional Water Quality Control Board Water Quality Certification (401) will be required prior to beginning work in the drainage areas. Final authority over the area rests with the appropriate agencies. U.S. Army Corps of Engineers has requested that the following statement be added to all delineations:

"This delineation/determination has been conducted to identify the limits of the Corps Clean Water Act jurisdiction for the particular site identified in this request. This delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work."

V. REFERENCES

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VI. APPENDICES

Data Forms
Hydrology
Plan Sheet

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site : Fallbrook Oaks		Date	March 17, 2006
Applicant / Owner : Keystone		County	San Diego
Investigator Teresa Gonzales		State	CA
Do Normal Circumstances exist on the site?	XYES NO	Community ID	
Is the site significantly disturbed (Atypical Situation)?	YES XNO	Transect ID	1
Is the area a potential Problem Area? (If needed, explain on reverse)	YES XNO	Plot ID	1

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 Quercus agrifolia	T	NI			
2 Heteromeles arbutifolia	S	NI			
3 Toxicodendron	S	NI			
4					
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 0%					
Remarks Oak woodand					

HYDROLOGY

☐ Recorded Data (Describe in Remarks)

- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

xx No Recorded Data Available

FIELD OBSERVATIONS	
Depth of Surface Water	NA (in)
Depth to Free Water in Pit	NA (in)
Depth to Saturated Soil	NA(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:

- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):

- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase): Placentia sandy loam 5-9 %				Drainage Class: mod well-drained	
Taxonomy (Subgroup):			Field Observations Confirm Mapped Type? XX YES NO		
PROFILE DESCRIPTION					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-21	A	10 yr 4/2			Loam sand

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: not hydric soil

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	YES XNO	Is this Sampling Point Within a Wetland? YES X NO
Wetland Hydrology Present?	YES XNO	
Hydric Soils Present?	YES XNO	

Remarks: Dripline

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site : Fallbrook Oaks		Date	March 17, 2006
Applicant / Owner : Keystone		County	San Diego
Investigator Teresa Gonzales		State	CA
Do Normal Circumstances exist on the site?	XYES NO	Community ID	
Is the site significantly disturbed (Atypical Situation)?	YES XNO	Transect ID	1-1
Is the area a potential Problem Area? (If needed, explain on reverse)	YES XNO	Plot ID	1-1

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 Quercus agrifolia	T	NI			
2 Vinca major	H	NI			
3					
4					
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 0%					
Remarks Oak woodand					

HYDROLOGY

☐ Recorded Data (Describe in Remarks)

☐ Stream, Lake, or Tide Gauge

☐ Aerial Photographs

☐ Other

xx No Recorded Data Available

FIELD OBSERVATIONS	
Depth of Surface Water	NA (in)
Depth to Free Water in Pit	NA (in)
Depth to Saturated Soil	NA(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:

☐ Inundated

☐ Saturated in Upper 12 Inches

☐ Water Marks

☐ Drift Lines

☐ Sediment Deposits

☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):

☐ Oxidized Root Channels in Upper 12 Inches

☐ Water-Stained Leaves

☐ Local Soil Survey Data

☐ FAC-Neutral Test

☐ Other (Explain in Remarks)

SOILS

Map Unit Name (Series and Phase): Ramona sandy loam 5-9 %				Drainage Class: mod well-drained	
Taxonomy (Subgroup):			Field Observations Confirm Mapped Type? XX YES NO		
PROFILE DESCRIPTION					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-21	A	10 yr 4/2			Loam sand

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: not hydric soil

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	YES XNO	Is this Sampling Point Within a Wetland? YES X NO
Wetland Hydrology Present?	YES XNO	
Hydric Soils Present?	YES XNO	

Remarks: uplands

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site : Fallbrook Oaks		Date	March 17, 2006
Applicant / Owner : Keystone		County	San Diego
Investigator Teresa Gonzales		State	CA
Do Normal Circumstances exist on the site?	XYES NO	Community ID	
Is the site significantly disturbed (Atypical Situation)?	YES XNO	Transect ID	2
Is the area a potential Problem Area? (If needed, explain on reverse)	YES XNO	Plot ID	2

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1					
2					
3					
4					
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 0%					
Remarks Channel is unvegetated. Surrounding vegetation contains coast live oak, brazillian pepper, toyon, poison oak and English ivy.					

HYDROLOGY

☐ Recorded Data (Describe in Remarks)

☐ Stream, Lake, or Tide Gauge

☐ Aerial Photographs

☐ Other

xx No Recorded Data Available

FIELD OBSERVATIONS	
Depth of Surface Water	2 (in)
Depth to Free Water in Pit	NA (in)
Depth to Saturated Soil	NA(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:

X Inundated

☐ Saturated in Upper 12 Inches

X Water Marks

X Drift Lines

X Sediment Deposits

☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):

☐ Oxidized Root Channels in Upper 12 Inches

X Water-Stained Leaves

☐ Local Soil Survey Data

☐ FAC-Neutral Test

☐ Other (Explain in Remarks)

Sample point within channel, raining on day sample taken.

SOILS

Map Unit Name (Series and Phase): Placentia sandy loam 5-9 %				Drainage Class: mod well-drained	
Taxonomy (Subgroup):			Field Observations Confirm Mapped Type? XX YES NO		
PROFILE DESCRIPTION					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-1	A	10 yr 2/2			Loam sand
1-9		7.5 yr 3/4			sand
9-20		10 yr 3/2			sand

HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: not hydric soil

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	YES XNO	Is this Sampling Point Within a Wetland? YES X NO
Wetland Hydrology Present?	X YES NO	
Hydric Soils Present?	YES XNO	
Remarks: waters		

DATA FORM

ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site : Fallbrook Oaks		Date	March 17, 2006
Applicant / Owner : Keystone		County	San Diego
Investigator Teresa Gonzales		State	CA
Do Normal Circumstances exist on the site?	XYES NO	Community ID	
Is the site significantly disturbed (Atypical Situation)?	YES XNO	Transect ID	2-2
Is the area a potential Problem Area? (If needed, explain on reverse)	YES XNO	Plot ID	2-2

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1					
2					
3					
4					
Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 0%					
Remarks Channel is unvegetated.					

HYDROLOGY

☐ Recorded Data (Describe in Remarks)

☐ Stream, Lake, or Tide Gauge

☐ Aerial Photographs

☐ Other

xx No Recorded Data Available

FIELD OBSERVATIONS	
Depth of Surface Water	4 (in)
Depth to Free Water in Pit	NA (in)
Depth to Saturated Soil	NA(in)

WETLAND HYDROLOGY INDICATORS

Primary Indicators:

X Inundated

☐ Saturated in Upper 12 Inches

X Water Marks

X Drift Lines

X Sediment Deposits

☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):

☐ Oxidized Root Channels in Upper 12 Inches

X Water-Stained Leaves

☐ Local Soil Survey Data

☐ FAC-Neutral Test

☐ Other (Explain in Remarks)

Sample point within channel, flowing.

SOILS

Map Unit Name (Series and Phase): Ramona sandy loam 5-9 %				Drainage Class: mod well-drained	
Taxonomy (Subgroup):			Field Observations Confirm Mapped Type? XX YES NO		
PROFILE DESCRIPTION					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-22	A	10 yr 3/3			sand

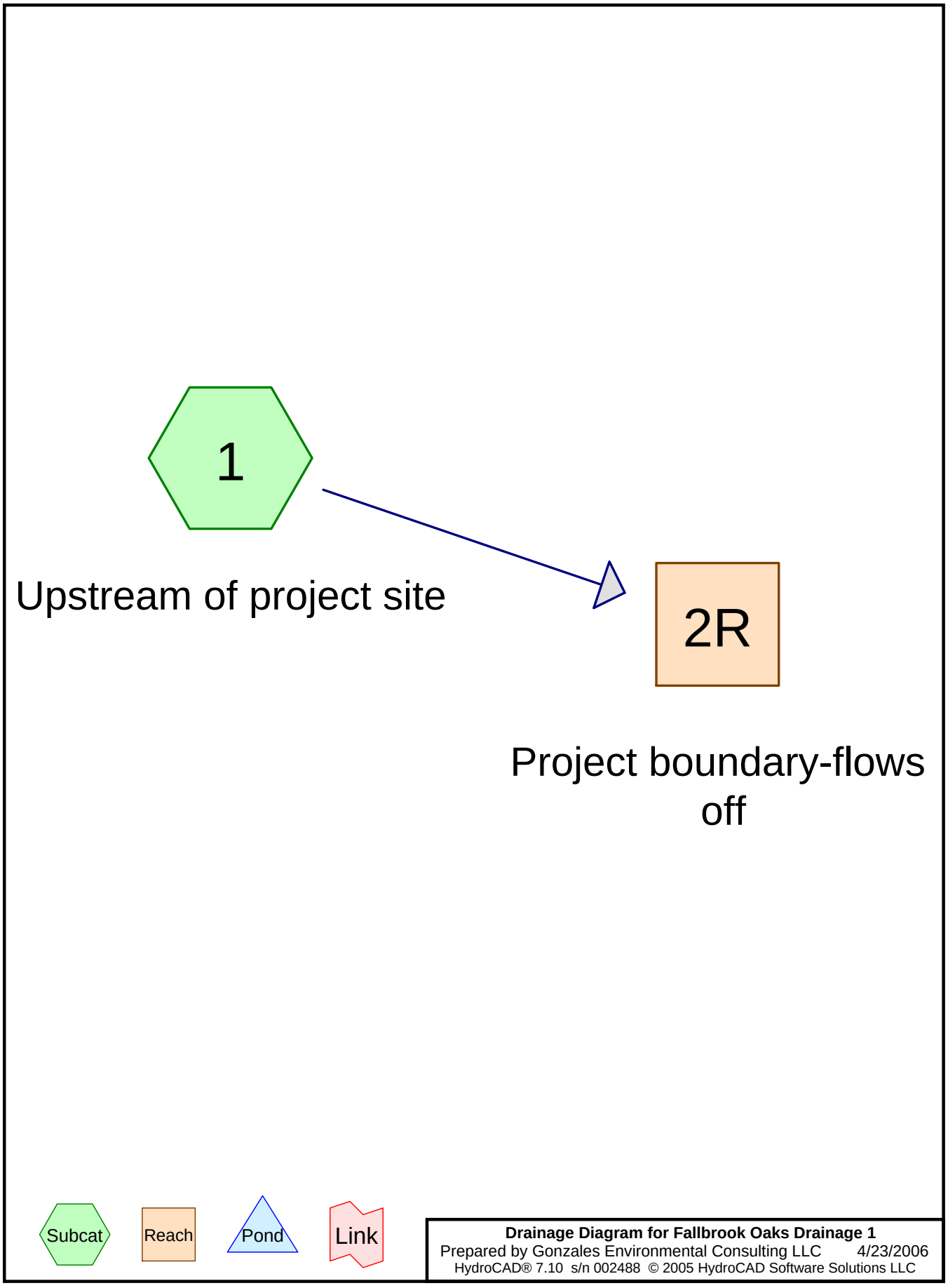
HYDRIC SOIL INDICATORS:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: Soil is saturated, no hydric indicators.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	YES XNO	Is this Sampling Point Within a Wetland? YES X NO
Wetland Hydrology Present?	X YES NO	
Hydric Soils Present?	YES XNO	
Remarks: waters		



Drainage Diagram for Fallbrook Oaks Drainage 1
Prepared by Gonzales Environmental Consulting LLC 4/23/2006

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Upstream of project site Runoff Area=76.000 ac Runoff Depth>1.19"
Flow Length=10,000' Tc=270.6 min CN=48 Runoff=7.71 cfs 7.532 af

Reach 2R: Project boundary-flows off Peak Depth=0.49' Max Vel=2.3 fps Inflow=7.71 cfs 7.532 af
n=0.050 L=720.0' S=0.0278 '/' Capacity=383.70 cfs Outflow=7.70 cfs 7.531 af

Total Runoff Area = 76.000 ac Runoff Volume = 7.532 af Average Runoff Depth = 1.19"

Subcatchment 1: Upstream of project site

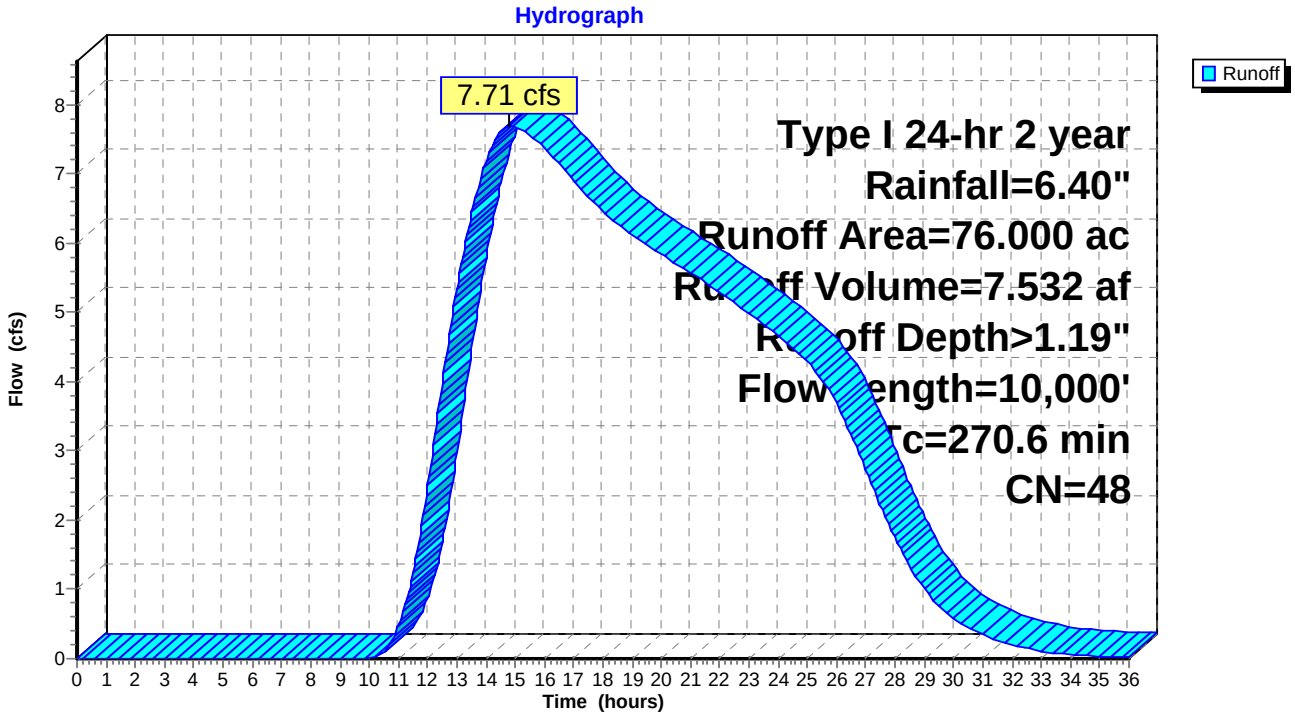
Runoff = 7.71 cfs @ 14.76 hrs, Volume= 7.532 af, Depth> 1.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type I 24-hr 2 year Rainfall=6.40"

Area (ac)	CN	Description
76.000	48	Brush, Good, HSG B

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
270.6	10,000	0.0302	0.6		**Lag/CN Method,** Contour Length= 1,000' Interval= 100'

Subcatchment 1: Upstream of project site



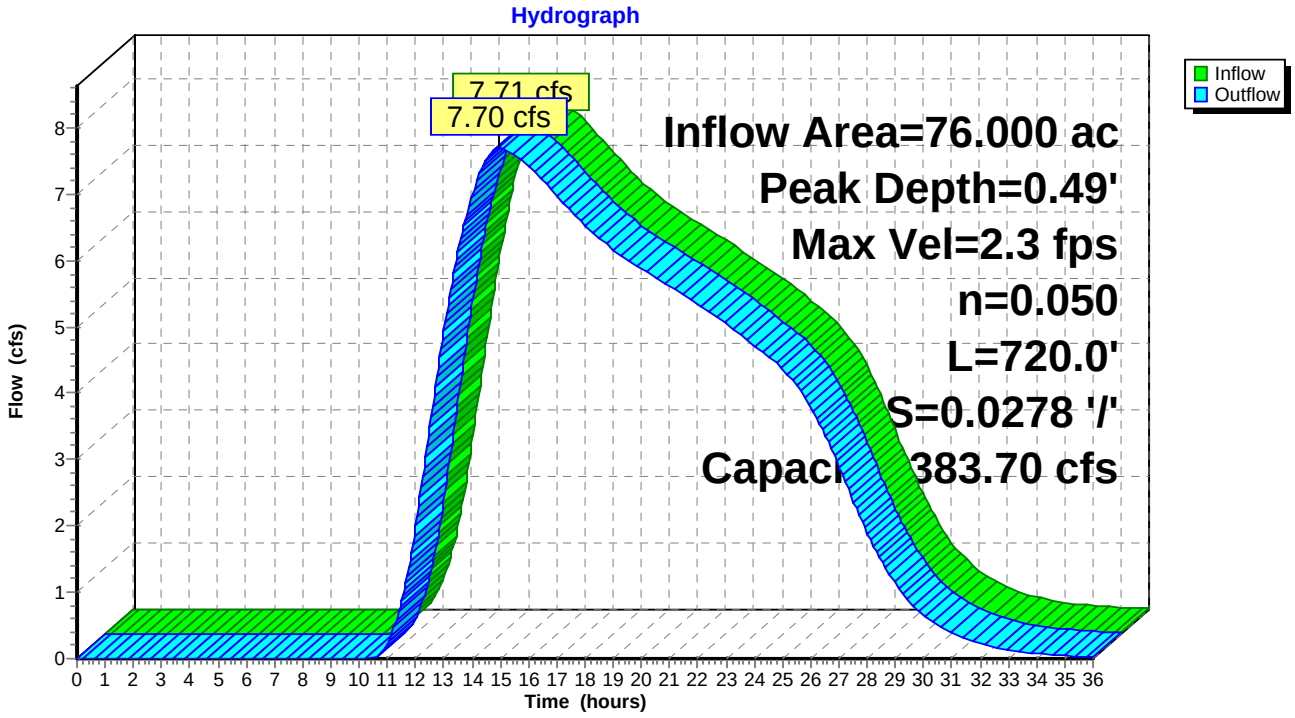
Reach 2R: Project boundary-flows off

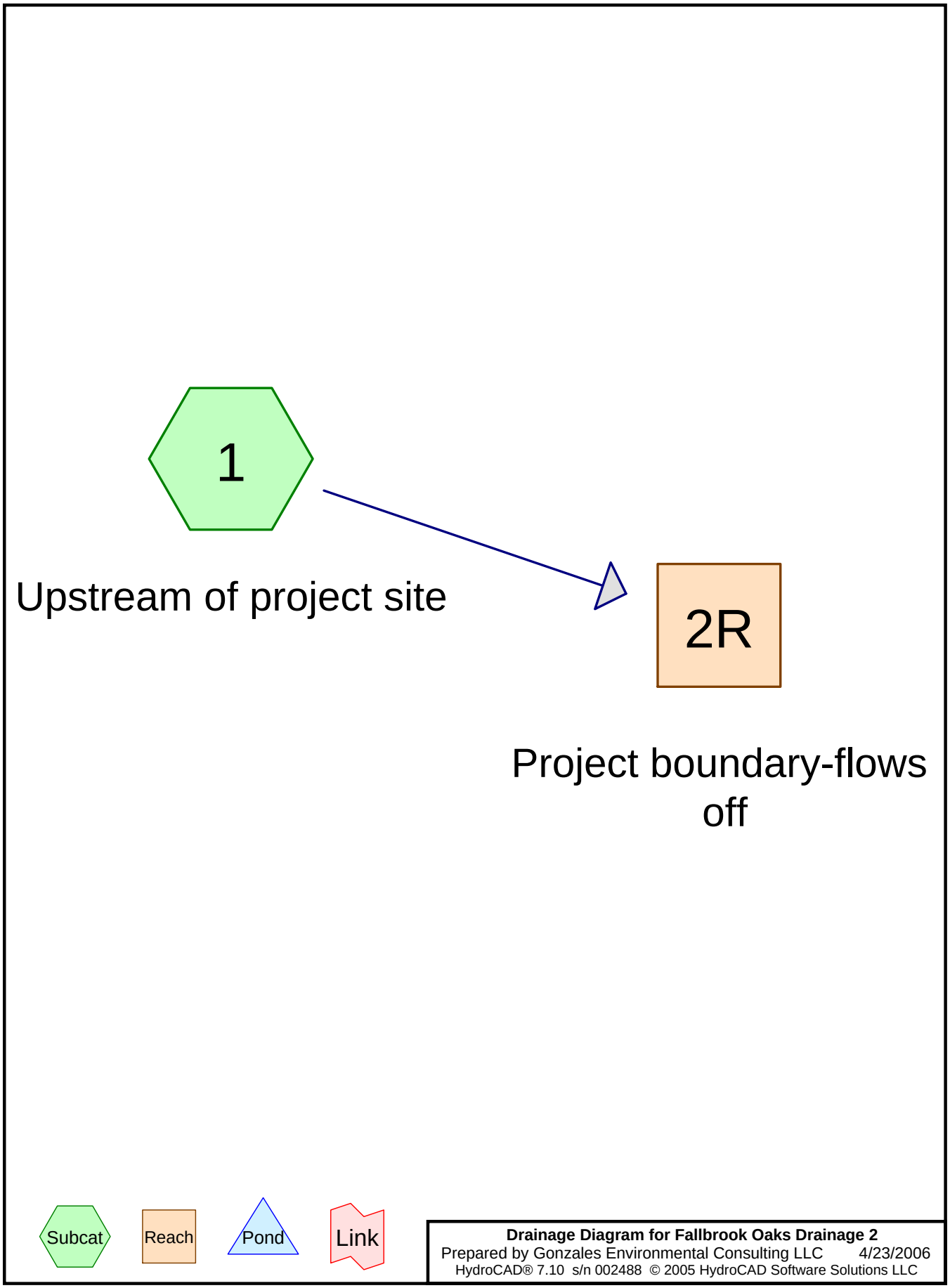
Inflow Area = 76.000 ac, Inflow Depth > 1.19" for 2 year event
Inflow = 7.71 cfs @ 14.76 hrs, Volume= 7.532 af
Outflow = 7.70 cfs @ 14.92 hrs, Volume= 7.531 af, Atten= 0%, Lag= 9.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.3 fps, Min. Travel Time= 5.1 min
Avg. Velocity = 1.6 fps, Avg. Travel Time= 7.4 min

Peak Depth= 0.49' @ 14.83 hrs
Capacity at bank full= 383.70 cfs
Inlet Invert= 560.00', Outlet Invert= 540.00'
25.00' x 3.00' deep Parabolic Channel, n= 0.050
Length= 720.0' Slope= 0.0278 '/'

Reach 2R: Project boundary-flows off





Drainage Diagram for Fallbrook Oaks Drainage 2
Prepared by Gonzales Environmental Consulting LLC 4/23/2006

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Upstream of project site Runoff Area=84.000 ac Runoff Depth>1.19"
Flow Length=10,000' Tc=284.5 min CN=48 Runoff=8.27 cfs 8.323 af

Reach 2R: Project boundary-flows off Peak Depth=0.43' Max Vel=1.9 fps Inflow=8.27 cfs 8.323 af
n=0.050 L=960.0' S=0.0208 '/' Capacity=553.19 cfs Outflow=8.27 cfs 8.321 af

Total Runoff Area = 84.000 ac Runoff Volume = 8.323 af Average Runoff Depth = 1.19"

Subcatchment 1: Upstream of project site

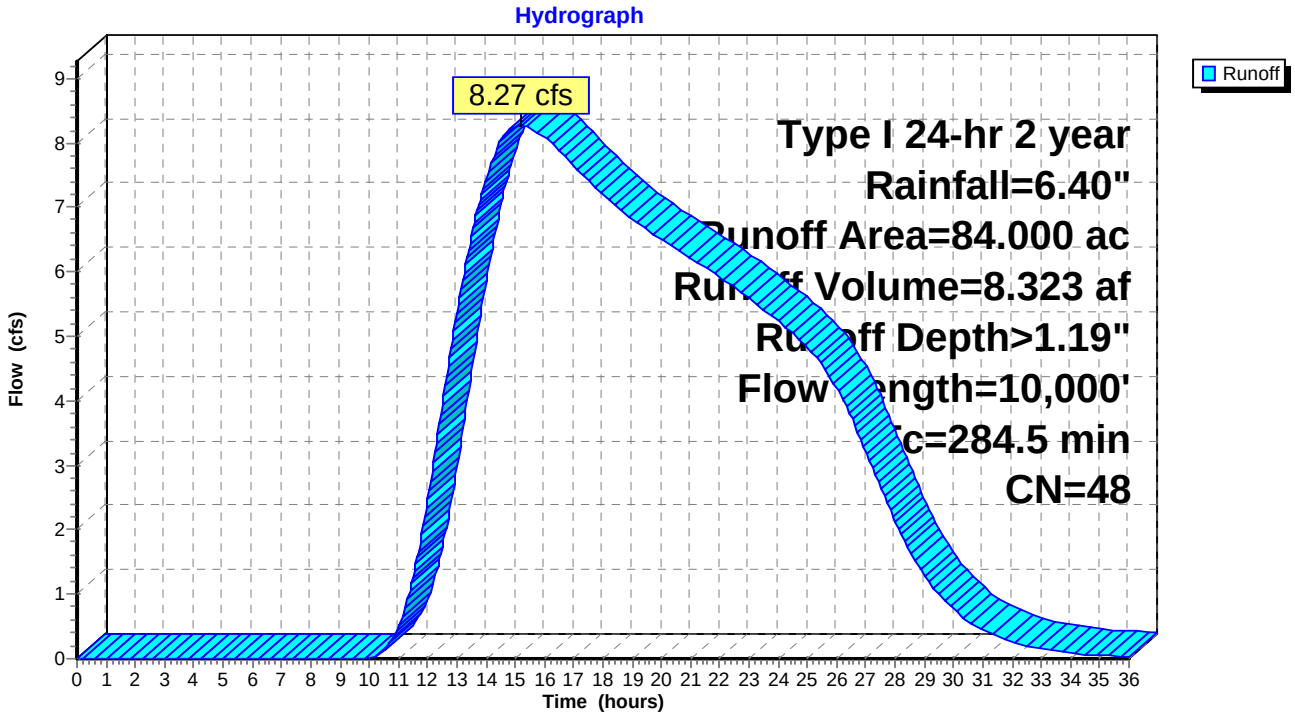
Runoff = 8.27 cfs @ 15.16 hrs, Volume= 8.323 af, Depth> 1.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type I 24-hr 2 year Rainfall=6.40"

Area (ac)	CN	Description
84.000	48	Brush, Good, HSG B

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
284.5	10,000	0.0273	0.6		**Lag/CN Method,** Contour Length= 1,000' Interval= 100'

Subcatchment 1: Upstream of project site



Reach 2R: Project boundary-flows off

Inflow Area = 84.000 ac, Inflow Depth > 1.19" for 2 year event
Inflow = 8.27 cfs @ 15.16 hrs, Volume= 8.323 af
Outflow = 8.27 cfs @ 15.39 hrs, Volume= 8.321 af, Atten= 0%, Lag= 13.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.9 fps, Min. Travel Time= 8.6 min
Avg. Velocity = 1.3 fps, Avg. Travel Time= 12.3 min

Peak Depth= 0.43' @ 15.24 hrs
Capacity at bank full= 553.19 cfs
Inlet Invert= 560.00', Outlet Invert= 540.00'
41.00' x 3.00' deep Parabolic Channel, n= 0.050
Length= 960.0' Slope= 0.0208 '/'

Reach 2R: Project boundary-flows off